

THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0310 838220

C. RISK ASSESSMENT

10. Type of environment:

- Land Swamp Water Seasonal swamp

i. Type of environment to which oil has spread:

- Land Swamp Water River (identify) _____

ii. Weather condition

- Raining Sunny

11. Distance from the nearest sensitive habitat

- Government reserved and designated protected area [.m]
 Drinking water source [.m]
 Built up area [.m]
 Farmlands [.m]
 Fish Farm/Pond [.m]
 Fishing net [.m]
 Others (specify) [.m]

12. Containment measures put in place:

- Booms Trench Dyke

Others: _____

13. Any pictures or video coverage? [] [N]

14. Was there any disruption to the investigation? [Y] []

If yes give brief description:

NOT APPLICABLE

D. TYPE/NUMBERS OF PROPERTIES, IF ANY, FOUND WITHIN THE AREA OF SPREAD OF OIL

15. Structures / Properties

S/N	Type of Structures	Description	Size	Number	Comments
<u>NONE WITHIN AREA OF IMPACT</u>					

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16. Crops/Economic Trees

S/N	Type of crops	Young	Medium	Matured	Quantity	Comments
NONE WITHIN AREA OF IMPACT						

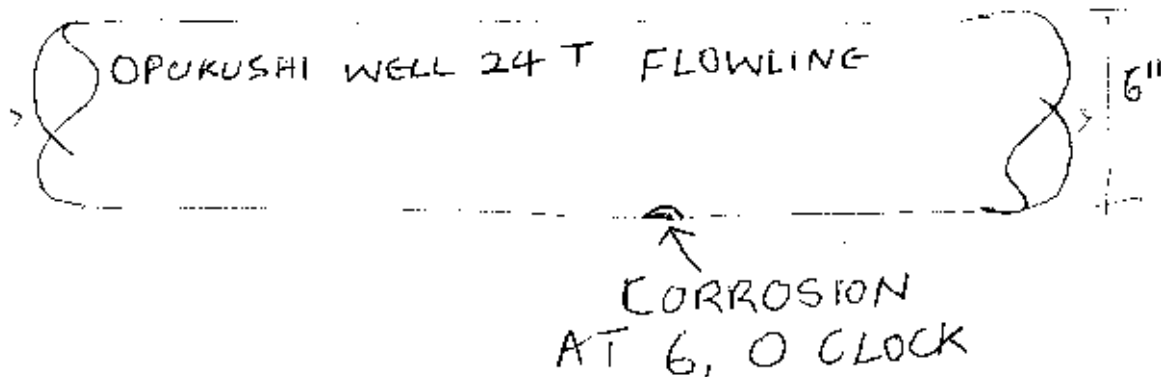
17. Fish/Nets/Ponds

S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
NONE WITHIN AREA OF IMPACT				

18. Others (Specify) i.e. Animal Traps

S/N	Others	Description	Quantity/Size	Comments
NONE WITHIN AREA OF IMPACT				

E. GRAPHIC DESCRIPTION OF LEAK POINT While detail report of the leak point should be contained in the Leak report, overview sketch of the site should be added as an appendix 1)



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F: TABLE SHOWING SOME OF COORDINATES TAKEN DURING JIV FOR AREA CALCULATION

19. Impacted area boundary Coordinates (If more than 12 points, Attach as an appendix 2)

S/N	Northing	Easting
1.	101007	371609
2.	101004	371609
3	101010	371600
4	101020	371589
5	101022	371586
6	101016	371613
7	101016	371609
8	101027	371609
9	101022	371621
10	101018	371622
11	101016	371605
SP	101018	371604

G. INCIDENT INFORMATION:

20. Impacted Area Details

- Total calculated area of impact 263.556m²
- Impact within SPDC R.O.W 263.556m²
- Impact outside R.O.W NIL

21. Volume of oil recovered before completion of JIV (V_{rec}):

Recovered oil V _{rec}	30	barrels
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20. Computation of the residual volume on site

- a. Computation of volume of pool of free phase oil (on land or confined water body).
- i. Area (m²) occupied by pool of free phase oil NIL
 - ii. Average Depth (m) of pool of free phase oil NOT APPLICABLE

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iii. Emulsification factor: NOT APPLICABLE

iv.

Volume of pool of free phase oil, V_{pool} :	NIL	barrels
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b. Computation of volume of infiltrated oil in the soil (V_{inf}).

i. Area *(m²) covered by the oil: NIL

ii. Area of the pool of free phase oil in touch with soil: NIL

iii. Average Depth (m) below ground surface of infiltration of oil: NOT APPLICABLE

iv. Soil type: NOT APPLICABLE

v. P_e (effective porosity of the soil): NOT APPLICABLE

iv.

Volume of infiltrated oil, V_{inf} :	NIL	barrels
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21. Computation of volume of oil on open water based on standard coloration.

i. Total area of oil on open water: 263.56 m²

ii. Table of average depth of oil on water based on coloration**

	Thickness (mm)	Percentage coverage	Volume (m ³)
Barely Visible	0.00004	/	/
Silvery	0.00008	/	/
Slight Color	0.00015	/	/
Bright Color	0.0003	/	/
Dull	0.001	40%	0.0001054224
Dark	0.002	/	/
Blackoil	0.1	30%	0.00790668
Emulsion (30% Oil)	1	30%	0.0790668
	Percent Total	100%	Total Volume 0.09 m ³

iii.

Volume of oil on open water, V_{wat} :	0.55	barrels
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22. Calculation of evaporated volume:

i. Oil type: BONNY MEDIUM

ii. E-Factor: 15%

iii.

Volume of evaporated oil: V_{evap} :	5.39	barrels
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Evaporation Factors (E-Factor) for SPDC Crude oil			
Oil type	Days on site	Bonny Light	Bonny Medium
Period Since Oil Spill	< 1 day	10%	5%
	1-7 days	25%	15%
	> 7 days	40%	25%

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23. Gross Total Estimated Spilled Volume

$$V_{tot}(bbls) = V_{evap}(bbls) + V_{wat}(bbls) + V_{ice}(bbls) + V_{part}(bbls) + V_{res}(bbls)$$

$V_{tot}(bbls) = 35.94 \text{ BBLs}$

24. Net Total Estimated Spilled Volume

$$V_{Est}(bbls) = V_{evap}(bbls) + 0.6 * V_{wat}(bbls) + V_{ice}(bbls) + V_{part}(bbls) + V_{res}(bbls)$$

$V_{Est}(bbls) = 35.72 \text{ BBLs}$

*Calculation of the respective estimated volume is to be done on site as far as practicable using the new spill volume estimation software on site

*Conversion of m3 to barrels is Total volume VT (m3) x 6.29

*Emulsification factor for spill on water to consider is 60% of volume of oil.

25. GENERAL STATUS OF THE SITE

A. Joint investigation of the incident site found that there is no residual impact after the initial response and therefore recommend that the site be closed out

B. Investigation of the incident site showed that there is residual impact on site requiring further works

26 REPRESENTATIVES

This report was filled and signed on the 10/07/2012 at incident site by joint investigation representatives from

- Host Community
- Department of Petroleum Resources [DPR]:
- National Oil Spill Detection and Response Agency [NOSDRA]:
- State Ministry of Environment [SME]:
- Nigeria Police Force [NPF]:
- Shell Petroleum Development Company [SPDC]:

Tick as applicable

27. Appendix 1: Overview sketch of the site

